

CLAIMS:

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1. A labeled complex comprising, a carrier, a large number of target receptors bonded with said carrier, and labeled substances bonded with each target receptor at different locations from a location at which said carrier is bonded, wherein said target receptor holds or can hold one or two or more types of targets, and in all of said labeled substances, predetermined types are contained at predetermined molar ratios.
 2. A labeled complex according to claim 1, wherein all of said labeled substances are distributed to almost all target receptors bonded with one carrier, and one target receptor is bonded with one type of labeled substance.
 3. A labeled complex according to either one of claim 1 and claim 2, wherein said target receptor, which is bonded with the carrier on a part thereof, and bonded with the labeled substance on the other part thereof, is formed in a slender shape such as a line, a thread, a hair, a stick and the like.
 4. A labeled complex according to any one of claim 1 through claim 3, wherein said target receptors comprise chemical compounds which contain biopolymers such as nucleic acids, peptides, proteins, polysaccharides, lipids and the like, or living beings such as viruses, bacteria and the like or a part thereof, or substances which hold or are able to hold them.
 5. A labeled complex according to any one of claim 1 through claim 4, wherein said target receptors comprise nucleic acids having a predetermined double strand base sequence, said labeled substance is bonded with only a single strand at one location, and said carrier is bonded with the other single strand in at another location.
 6. A labeled complex according to any one of claim 1 through claim 4, wherein said target receptor comprises nucleic acid having a predetermined double strand base sequence, said labeled substance is bonded only with one location of a single strand, and said carrier is fixed to another location of the

single strand.

7. A labeled complex according to any one of claim 1 through claim 4, wherein said target receptor is a single strand nucleic acid.

8. A labeled complex according to any one of claim 1 through claim 6, wherein said labeled substance is a fluorescent substance, mineral phosphate, or luminescent substance of a chemiluminescent substance and the like.

9. A labeled complex according to claim 8, wherein the type of said luminescent substance can be discriminated by any one of the excitation wavelength, emission wavelength, emission intensity, degree of emission polarization, emission phase or emission lifetime.

10. A labeled complex according to claim 9, wherein said carrier is coated with one of a pair of chemical compounds that are specifically bonded, such as avidin, biotin and the like, said target receptor is a DNA fragment having a predetermined base sequence, the other chemical compound of said chemical compound pair is bonded at one position, and said fluorescent substance is bonded at an other position.

11. A labeled complex according to any one of claim 1 through claim 9, wherein said carrier has objects of action at a distance such as magnetic particles and the like, which can be controlled remotely.

12. A process for producing a labeled complex according to any one of claim 1 through claim 11, said process having; a step for forming target receptors, which are bonded with labeled substances at one place, and hold or are capable of holding specific targets, and a step for bonding the target receptors with the carrier.

13. A process for producing a labeled complex according to claim 12, wherein said step for bonding target receptors with said carriers is performed by mixing the carriers with which the target receptors are to be bonded, in a liquid wherein a large number of target receptors which are bonded with labeled

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substances are suspended such that all of the labeled substances are of the types and molar ratios that are determined according to the types of the target receptors or the types and the quantity ratios of the target receptors.

14. A process for producing a labeled complex according to claim 12,
5 wherein said step for generating the target receptors has a step for synthesizing a single strand nucleic acid that is bonded with a labeled substance, and that has a predetermined base sequence, and synthesizing another single strand nucleic acid that has a high relation with the base sequence, and that is processed to be capable of being bonded with the carriers,
10 and generating a double strand nucleic acid by annealing these.

15. A process for producing a labeled complex according to claim 12,
wherein said step for generating the target receptors has a step wherein, by using a first primer for reproduction of a single strand nucleic acid that is bonded with said labeled substances and that has a predetermined base
15 sequence, and a second primer for reproduction of the other single strand nucleic acid to be bonded with said carrier, a double strand nucleic acid is synthesized and amplified.

16. A process for producing a labeled complex according to claim 12,
wherein said step for bonding the target receptors with carriers, or the step for
20 generating the target receptors, synthesizes and amplifies double strand nucleic acid by using a first primer for reproduction of a single strand nucleic acid with a predetermined base sequence, which combines with either one of said labeled substance and said carrier, and also provides a restriction enzyme process at the opposite end to the end that is bonded with said labeled
25 substance or a carrier and, via an adapter composed of DNA ligase and the like, bonds a carrier or a labeled substance onto the single strand side to combine the target receptor with the carrier, or generates a target reservoir.

17. A process for producing a labeled complex according to claim 16,

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 wherein said step for generating the target receptor includes a step for removing a single strand that is not bonded with said labeled substance or said carrier by denaturation.

18. A process for producing a labeled complex according to claim 16,
 5 wherein said step for bonding the target receptor with the carrier bonds said target receptor and said carrier by utilizing bonding including physical or chemical bonding such as attachment, adsorption, adhesion through the many holes, gaps, or irregularities that the carrier has, or a specific interaction of biotin, avidin and the like, to suspend said target receptor and said carrier.

10 19. A process for producing a labeled complex according to claim 16, wherein said step for generating the target receptor is a step for generating a plurality of target receptors with which is bonded one of a pair of chemical compounds, one part of which is bonded with the labeled substance, and the other part of which is specifically bonded, and said step for bonding the target
 15 receptor with the carrier is a step for bonding the target receptor with the carrier by suspending in liquid the carrier on which the other of said pair of chemical compounds is coated, and said target receptor with which the labeled substance is bonded.

20 20. A process for utilizing a labeled complex having; a step for selecting a labeled complex whose type is targeted from among the labeled complex group having a large number of a plurality of types of labeled complexes wherein the types or molar ratio of the targets of the labeled complex according to any one of claim 1 through claim 11, and the labeled substances assigned to the targets are different from each other, and a step wherein the selected labeled complex
 25 discriminates the labeled target.

21. A process for utilizing a labeled complex according to claim 20, wherein said selection step has a liquid path and magnetic means which is capable of applying magnetization to inside of the liquid path, and is performed for the

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 5 labeled complex, or the labeled complex and selective substances, using a pipette device for suction and discharge, and by operations such as quantification, isolation, apportioning, dispensing, clarity, suspension, agitation, concentration, dilution, mixing, contact, capture, holding, washing, denaturation, incubation, temperature control, extraction, recovery, transport, and the like, or by a combination of these operations.

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 10 22. A process for utilizing a labeled complex according to either one of claim 20 and claim 22, wherein said selection step has; a step for suspending said labeled complex group, a step for contacting the suspension in which the labeled complex group is suspended, and selective substances for selecting the object labeled complexes, and a step for extracting or separating the labeled complexes bonded with the selective substances.

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 15 23. A process for utilizing a labeled complex according to claim 22, wherein said selection step has a step for labeling said selective substances with different types of labeled substances from the labeled substances contained in the labeled complex, and for extracting and separating the labeled complex bonded with the selective substances based on the labeled substances.

20 24. A process for utilizing a labeled complex according to either one of claim 20 and claim 21, wherein said discrimination step, in the case where said labeled substances are luminescent substances, computes the ratio of the amount of the type based on a result of the measurement of intensity of each emission wavelength which the labeled complex emits, to discriminate the corresponding target.

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 25 25. A process for utilizing a labeled complex according to either one of claim 20 and claim 21, wherein with said selection step, said target receptor is a double strand nucleic acid with a predetermined base sequence, and in the case where said labeled substance and said carrier are bonded with only one single strand thereof, the other single strand is removed by denaturation; and

moreover for said selective substances, nucleic acid having a predetermined base sequence is used.

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26. A process for utilizing a labeled complex according to either one of claim 20 and claim 21, wherein said selection step has a step for contacting stationary
5 phases on which selective substances are fixed, and a liquid wherein the labeled complex group is suspended, and a step for selecting a labeled complex bonded with the selective substances on the stationary phase by removing the suspension by washing.

27. A process for utilizing a labeled complex according to claim 26, wherein
10 said selection step has a step wherein labeled complexes are eluted physically or chemically from said stationary phases for extraction, and are selected by separation, washing or the like.

28. A process for utilizing a labeled complex according to claim 26, wherein
15 magnetic particles are used for said stationary phases, the carriers of said labeled complex are formed by magnetic particles or non-magnetic particles, and compared with the magnetic particles of the stationary phase, the magnetic particles of the labeled complex experience a smaller magnetic field for the same external magnetic field.

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29. A process for utilizing a labeled complex according to claim 26, wherein
20 said selection substance is labeled with a labeled substance of one of a pair of chemical compounds that are specifically bonded, and said selection step has a step where a liquid wherein the conjugation of the selective substances and labeled complexes is suspended, is contacted with the stationary phase on which the other of said pair of chemical compounds is fixed, the conjugation is
25 bonded with said stationary phase, the substances other than those bonded with the stationary phase are washed to be removed, said target receptor is denatured to be a single strand, and the labeled complex is eluted and selected by extraction, or separation.

30. A process for utilizing a labeled complex according to either one of claim 20 and claim 21, wherein said selection step has; a step for labeling said labeled complex by luminescent substances, for labeling the selective substances by different types of luminescent substances from the labeled substances, and for

5 mixing and contacting the liquid in which the labeled complex group is suspended with the selective substances, and a step for passing suspended liquid of the labeled complex group including labeled complexes bonded with the selective substances through a translucent narrow tube, and said discrimination step has a step for receiving light when the suspended liquid of

10 said labeled complex group passes through said narrow tube, and a step wherein, with respect to the labeled complex selected by the measurement of the intensity of light emitted by the selective substance, based on the result of a measurement of the intensity of light emitted by the labeled complex, the types and the molar ratio are computed to discriminate the corresponding target.

15 31. A process for utilizing a labeled complex according to either one of claim 21, wherein in the case where said discrimination substances or selective substances are fluorescent substances or mineral phosphates, in the step for passing said suspended liquid through said narrow tube, an excitation light for exciting the substances is emitted toward said narrow tube.

20 32. A target analyzing apparatus which utilizes a labeled complex, said apparatus having a transfer pump for transferring liquid within which a labeled complex group is suspended, a translucent narrow tube through which the suspension passes, light detecting means for detecting light from the discrimination substances and selective substances of the labeled complex

25 when passing through the narrow tube, and analyzing means for analyzing the intensity of light received by said light detecting means, selecting the labeled complex, and discriminating a target.

33. A target analyzing apparatus which utilizes a labeled complex

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according to claim 32, wherein there is further provided irradiating means for externally radiating excitation light toward said narrow tube for, in the case where said discrimination substances or selective substances are fluorescent substances or mineral phosphates, exciting the substances, or providing light
5 for scattering to obtain scattered light from the substances.

34. A target analyzing apparatus which utilizes a labeled complex according to claim 32, wherein said narrow tube forms part of a closed circuit, and the suspension of said labeled complex group is circulated in the closed circuit.

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